CLAIMS

1. A method of producing endostatin protein comprising:

recombinantly producing endostatin using an expression system;

recovering endostatin; and,

purifying endostatin.

2. The method of Claim 1, further comprising lyophilizing endostatin.

3. The method of Claim 1, wherein the expression system is *Pichia pastoris*, yeast, *E. coli,* insect cells, baculovirus, transgenic animals, or transgenic plants.

4. The method of Claim 1, wherein the expression system is *Pichia pastoris*.

5. The method of Claim 1, wherein the recombinantly produced endostatin has an amino acid sequence shown in SEQ ID NO: 3, SEQ ID NO: 5, SEQ ID NO: 6, SEQ ID NO: 7, SEQ ID NO: 8, or SEQ ID NO: 11, or a fragment thereof.

6. The method of Claim 1, wherein the recombinantly produced endostatin is encoded by a nucleotide sequence shown in SEQ ID NO: 4 or SEQ ID NO: 10, or a fragment thereof.

7. A method of recombinantly producing endostatin protein comprising:

preparing an inoculum culture; and

fermenting the culture.

8. The method of Claim 7, wherein the inoculum culture is a two stage seed process of *Pichia pastoris*.

9. The method of Claim 7, wherein the fermenting step includes fermentation media comprising calcium sulfate, potassium sulfate, magnesium sulfate, potassium hydroxide, phosphoric acid and glycerol.

10. The method of Claim 7, wherein the fermenting step comprises a fermentation process comprising a batch glycerol phase, a fed-batch glycerol phase, a methanol ramp phase and methanol induction phase.

11. A method of purifying endostatin protein comprising:

capturing endostatin from a sample using a first cation exchange column and expanded bed chromatography;

applying the endostatin to a heparin-sepharose column or to a column containing a resin useful for hydrophobic interaction chromatography;

applying the endostatin to an anion exchange column;

applying the endostatin to a second cation exchange column; and,

concentrating the endostatin.

12. The method of Claim 11, wherein the resin useful for hydrophobic interaction chromatography is phenyl sepharose resin.

13. The method of Claim 11, wherein the anion exchange column is an amine column.

14. The method of Claim 11, wherein first cation exchange column contains STREAMLINE™ sulfopropyl resin or carboxymethylcellulose.

15. The method of Claim 11, wherein concentrating the endostatin further comprises pushing the sample through a membrane containing a molecular weight cutoff selected for endostatin and eluting endostatin from the membrane with buffer.

16. The method of Claim 15, wherein the eluted endostatin is lyophilized.

17. The method of Claim 15, wherein the membrane is made from polyethersulfone.

18. The method of Claim 11, wherein concentrating the endostatin further comprises use of parallel flow concentrators.

19. The method of Claim 15, wherein the buffer comprises a citrate-phosphate buffer.

20. The method of Claim 19, further comprising removal of citrate by exchanging with phosphate buffered saline and a detergent.

21. The method of Claim 20, further comprising lyophilizing endostatin.

22. The method of Claim 21, further comprising reconstituting the lyophilized endostatin with a solution.

23. The method of Claim 22, wherein the solution is an aqueous zinc chloride solution.